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KNOWLEDGE, MYTH, AND ACTION[1]

MAN exists and nature exists; man's existence is not essentially different from that of nature: he does not stand over nature as a master, or above nature as a goal, or beneath nature as a servant. He exists *in* nature and nature exists in him—so far as he is a part of nature. Man can neither live nor be studied apart from the environments in which, to our knowledge, he has always been found. These are assumptions from which I begin. I set them down that misunderstandings may not arise in what is to follow.

But the assertion that man exists in nature and is a natural being need not involve us in the conclusion that he is so much of a piece with the rest of nature that he is in no respects different from sticks and stones. Man has a mind; sticks and stones, so far as we can tell, have not. Man, with his mind, entertains thoughts; he dreams, boasts, lies; and occasionally out of his dreaming, boasting, and lying emerge new forms, material or ideal, which become, like sticks and stones, enduring natural objects. If man is a part of nature, there is nothing surprising in the fact that nature is different for his being there. If man, unlike sticks and stones, has a mind, it is no cause for comment that man behaves differently from sticks and stones. It would be a wonder if he did not. It is therefore not in the philosopher's province to reduce nature to mind or mind to nature. Mind is already natural, and nature—in rather sparse areas, to be sure—is mental. That mind should exist and should behave differently from anything else is no more a mystery than that any one thing in nature should exist and should be different from any other thing. That mind should react to nature may arouse the wonder of the metaphysician, but that it does react can scarcely be doubted; and this fact of reaction I take for granted, in order that I may confine my attention to the manner of the reaction.

There is, I maintain, an observable difference between a conscious and intelligent and an unconscious reaction to an environ-

[1] Read at the meeting of the Western Division of the American Philosophical Association, Indianapolis, Indiana, April 25, 1941.

ment. There can be no doubt that involved in the commerce between conscious and intelligent organisms and their environments there are dynamic transactions of a physical and chemical sort. Yet all attempts to describe conscious and intelligent reaction solely in terms of these transactions omit the two features that distinguish it from other types of interaction. (1) Intelligent reaction is made not to a present *stimulus* but to a present *object*. I shall not pause here to argue the existence of objects in nature. Their existence is for the moment irrelevant. It is enough to assume that man conceives of them as existing and acts as if they existed. An object is not just a present something to be reacted to; it is a thing with a past and a future. Man grasps it through a concept in the form of a temporal pattern extending into past and future, and when he responds to such an object his behavior can not be adequately described as mere *re*action. He treats it as something which is not only *there*, but as something which *will be there*—though perhaps in an altered form—when and after his physical response has borne its fruits. His reasoned action is directed to this future object quite as much as to the present object which has stimulated him to action. (2) Men's conscious actions are conditioned, not only by their conceptualization of the future states of present objects, but also by conceptualization of their own future in terms of realized desires or ideals. Men are not just "driven from behind" by blind desires; they transform their primitive urges into conceived satisfactions and permit these conceptual constructs to draw them on to action. They combine their response to an object possessing a conceived future with their dreams of a state within which their desires can be satisfied; and thus they have envisaged in natural objects that, left to themselves, run through quite regular behavior patterns, possibilities that unaided nature does not develop. These possibilities, organized in specific ways, they have first conceptualized, then realized by operating upon natural objects in such a way as to develop their conceived potentialities. So accustomed have men become to look upon the natural objects of their environment as potential sources of as yet unrealized satisfactions, that they "read" these natural entities very largely in terms of the artifacts they hope to obtain from them. Man's desires, purposes, intentions to act in determinate manners thus become interwoven with his conceptions of natural objects, and interwoven not merely in imagination, but in fact; for he succeeds often enough in realizing his intentions to change materially the history of his environmental regions.

Imaginative thought or social myth may emerge in an act of empirical creation, but the creative process can be called a "ra-

tional" one only when the ultimate product both resembles the imaginative envisagement of it and is produced through the conscious manipulation of natural means. The imagination does create natural entities, but not in so far as it is "pure imagination." The envisagement of an ideal is the creation of a merely imaginative entity, and though such an ideal may become directive of human behavior, it does not, except infrequently and accidentally, direct that ideal toward an empirical realization of itself. Myth that is accepted as a supernatural background to natural events demands of men reactions that purely natural objects would not call forth. But ordinarily such action is not directed toward realization of the myth in nature, but, at most, toward a superficial mimicry of it. Acts of worship, not being directed toward nature with the intent of organizing potentialities inherent in the latter, for the most part result in no intended natural consequences. Their direct natural consequences are, in fact, regarded as by-products of little or no importance. Other natural consequences may be intended, but since these are to be obtained through the intervention of supernatural means, close attention to the machinery whereby nature produces its effects is regarded as unnecessary; and so man's traffic with the gods has for the most part resulted in but haphazard, unpremeditated, and uncontrolled natural effects that have only in rare cases combined to approximate in nature the mythical ideal which prompted action. When, however, an imagined ideal state is combined with a knowledge of the instrumentalities whereby natural events are to be controlled, and a willingness to employ these instrumentalities, it may then realize itself. The creative act thus includes, in addition to an imaginative phase, a scientific or knowledge-seeking phase, and a final phase of practical activity, directed on the one hand by a knowledge of potentialities inherent in nature and a means of actualizing them, and on the other by the ideal itself, which is selective of those potentialities to be chosen for actualization.

If knowledge bears the directive function necessary to creative action, myth bears a motivational and evaluative function that is equally necessary. Myths of the past are today recognized as mixtures of fact with desire. Naïve man reads his desires into nature, either in the spirit of optimism or pessimism. He may envisage the world as a place wherein his plans are destined to prosper —or to fail. What is, at first glance, amazing about primitive myth is the frequency with which it is dominated by a fatalistic pessimism. It might have been supposed that man would rather not think about nature at all than conceive of it in terms of overpowering and hostile forces. Man's inherent sadism and maso-

chism may partially account for this aspect of mythology, but the dramatic form which myths invariably assume offers a better clue. Man above all demands that his aspirations, his plans, even his brute passions, be viewed against a background that does not rob them of significance. He would rather live in a hostile world than an indifferent one; he can accept the thought of a hopelessly one-sided struggle with the forces of nature, but he can not tolerate the possibility that those forces are themselves unaware of what they are destroying in him. If myth does not invariably protect human ideals by guaranteeing their perpetuation and their eventual actualization, it does bestow upon them a cosmic significance by matching them against antagonists that are commensurable in form, if not in power.

Myth is not to be thought of as an arbitrary and irresponsible product of the imagination. At its inception it is, for the naïve individual, anchored in and explicative of the world in which he lives. In these respects it does not differ from a modern scientific theory. Later critics of a mythology may light on the obvious fact that it goes back of and beyond natural objects to invoke a realm of ghostly powers; but these critics forget that for primitive man the world is full of shadows, that indeed every natural object brings its shadow with it; and shadows are readily converted into ghosts under circumstances in which they are the loci of fear and hope. The eagerness with which the public turns to newspaper accounts of the latest scientific discovery, is evidence that the shadows natural objects cast are still regarded with fear and hope: the unknown remains for us, as it has always been for man, a threat and a promise, and our world has by no means been rid of the unknown by the labor of science. Science, according to some of its interpreters, is not even interested in dissipating the unknown; it does not pry into the why of things, but seeks merely the connections between them. This may be so, but we must insist that if the network of relations that science describes is projected into the future, no ascetic theorist of science can prevent men from reading into it or out of it a promise or a threat to human values. At most, men can be persuaded to refrain from invoking purpose and passion as an explanation of natural connections, but they can not be reasonably urged to abandon their habit of looking with concern upon the results of impact between the relational structure of nature and *their* purposes and passions.

The distinction we are making between myth and knowledge is one of function rather than of content. I doubt that any myth can be found that lacks all elements of knowledge; and without some

intermixture with myth, knowledge is sterile and useless. "Myth," in the mouths of philosophers, is usually a term of opprobrium applied by those outside a tradition to the beliefs of those within it. But any genuine belief may turn out to be a myth in this sense of the word; what distinguishes any doctrine accepted today as true or highly probable from a belief of the past now held to be a myth is an increment of knowledge acquired in the intervening time. Beliefs of a naïve man, for whom a doctrine in its entirety is either true or false, are both products of reason and material for reason; the reasoning may be either good or bad, the information on which it is based trustworthy or the reverse, but for the man who has accepted such a belief the material and methods which have entered into its construction are accepted along with the belief itself.

Men, as conscious beings, react not merely to a dead past, nor to an inevitable future rigidly calculable from the former. They react, at least in part, to an envisaged future that has been constructed by their own mental activities. Furthermore, whatever the philosopher may say as to what *ought* to be the case, men have shown a marked aversion toward reacting to a future that is irrelevant to their ideals. Myth is simply one of the devices men have used to lend to their ideals that sort of objective content which would insure their persistence through time and render intelligible man's struggle to realize them. It must be insisted that, in the first place, reason is employed not just to understand what has happened or what is now the case; but to understand what will happen and what in the future is possible and what impossible. And in the second place, what will happen or is possible or impossible is of interest to man because it bears upon the realization of his ideals. In our conception of man as a natural being, we have argued that his reactions are determined in part by his own nature, and that the future of any situation into which man enters as an active entity is, through this activity, partly determined by his nature. When man is driven by blind, uncalculating impulses from within or by uncontrollable and uncomprehended forces from without, he reacts differently than he would if his behavior were preceded by a conscious inventory of the situation. This is no less true if this inventory is false in whole or in part. Herein lies the risk that men must run in approaching nature imaginatively. Men who act upon the basis of false inventories of the potentialities inherent in the world and in themselves, are perhaps less likely to prosper than beings which must get along without any conceptual-

ized scheme representing the situations in which they are involved. But men can not act as sticks and stones, or as birds and beasts, and still be men. Man is an entity which acts to maintain itself, but this "self" which man acts to maintain is not just a present physical object. It is an envisaged being whose existence is spread over past, present, and future; its existence, at any one moment, is partially an existence in idea.

Some ideas rest solidly upon potentialities inherent in nature and some do not. But how distinguish between a potentiality that is genuine and one that is not? By taking stock, apparently, of the situation in which the potentiality is said to inhere, and by determining whether it is in fact one within which the potentiality could exist as an actuality. Such an answer is far too easy, of course. It only conceals a problem. The mythological conception of nature is one product of this process of taking stock; the scientific description is another. Is one better than the other, and, if so, why? The modern criticism of mythologizing activity is that the latter reads into nature the very conditions which would suffice to realize men's desires without stopping to confirm the existence of these conditions. This is obviously a question-begging procedure, and one that can only by accident lead to success in the realization of ideals. Even the unsophisticated individual can recognize the inadequacy of beliefs held in the past and can label them myths, but the sophisticated man can question his own beliefs as well. Observing the frequency with which men have deceived themselves in the past, he can take a skeptical attitude toward his own knowledge—even that portion of it which he has no specific cause to doubt—asking whether he, a human being of finite capacities like his predecessors, has any greater ground for confidence in his beliefs than had men of the past in theirs. Such an attitude can breed skepticism of an extreme and devastating sort, or it can, in a more temperate form, lead men to posit their beliefs in a tentative manner. For though modern beliefs may be based on a knowledge of nature that is more complete and more adequately tested than have been beliefs of former ages, they also may suffer the fate of the latter. Hence the sophisticated thinker can regard certain elements of his knowledge as myth because he has put them forward, without adequate proof of their truth, as helps to his understanding of nature or man; he may even, under the influence of epistemological doctrines, come to look upon the totality of his knowledge as subject to revision and possible rejection; and hence he may call all knowledge myth, meaning not that he is

unjustified in placing any confidence in knowledge, but that his placing of confidence is self-conscious, that he is aware of a possible discrepancy between what he believes and what is, and is accepting his beliefs with a willingness to run a risk.

But the myth of which we have been speaking is not identical with the hypotheses of science. Myth is richer than our science, first, because it combines the function of science, that of instructing men in the ways of nature, with another and equally important function which modern science has eschewed, that of envisaging human ideals as embedded in nature—whether as already realized in some remote region or as realizable because potentially present in what is already in progress. Even a pessimistic mythology envisages nature as a home for ideals, for though the ideals of a race of gods hostile to man may predominate there, man's own ideals, defeated though they may be in the end, are provided with a battle-ground upon which they can wage significant struggle—even in defeat they are dramatically validated! And, secondly, myth is richer than science because it is not so conscientious an interpreter of nature as the latter. It fails to achieve self-correction through criticism, in part because it is over-indulgent of human ideals. It is reluctant to admit of limits to the realm of potentialities, and it is this reluctance, more than anything else, which has precipitated the enmity between myth and science. Here, I believe we can agree, myth is in the wrong. One of the significant functions of scientific knowledge is that of informing us what processes in nature can not be changed by human effort. Science would prove destructive of ideals only if it should inform us that *no* portion of nature could possibly yield to our efforts to alter it, and this certainly is not what science has taught us up to the present. In a world in which some ideals can be physically realized and some not, it is to the advantage of men to know this. Though the anticipated future may lose in *anticipated* value content through the deletion of ideals impossible of realization, it may thereby actually gain in potential value content. For when men's energies are released from the pursuit of the impossible, they may be turned toward ends that are potentially grounded in nature. Hence even the "hard-headed" recognition that nature is indifferent to human ideals and in some areas definitely exclusive of them, when accepted in a spirit of rationality, is itself a step toward the concrete realization of ideals in nature.

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COMMENTS AND CRITICISM

PROFESSOR AARON ON UNIVERSALS [1]

Professor Aaron, the well-known British philosopher and historian of British philosophy, is chiefly concerned in his interesting lecture to find out how we come to know universals, to raise some important philosophical problems connected with the main thesis, and to make some necessary distinctions. The most important distinction is that between "discovered universals" and those which are "constructions of the mind." Simple qualities, e.g., a specific shade of red, are observed to recur. We frequently see, according to Aaron, that a given object has a specific shade of red and also that another object in the same visual field has the same shade of red. Here the same universal is said to be "in two places at the same time" and "it is first known as a universal in so far as I see it to belong to two or more objects." Aaron adds that not only do simple qualities recur, but complex qualities, relations like *larger than,* and what he calls "thing-universals" like *man, table, bed,* also recur. From this he concludes that some universals are as "primitive as particulars," and that the traditional doctrine of abstraction, according to which we *begin* with particulars from which we later abstract universals, does not hold for *all* universals, or, as he prefers to express it, for all senses of the word "universal."

This brings Aaron to those cases in which our experience *begins* with wholes or *Gestalten* that are universals. Such universals, he says, are vague, and it is only after discrimination in such cases that we come to apprehend unique individuals. Here, of course, the universal is not only not experienced *after* the particular, but before it. In passing, Aaron comments on the nature of vagueness and says that "a universal is vague when we cannot define it." He also quotes with approval Peirce's remark that a vague universal is that to which the principle of contradiction does not apply. Although Aaron does not discuss the question, the reader may be led to ask about the relation between lacking definition (i.e., explicit or contextual definition) and being vague in the sense of Peirce. Does definition always result in a concept which *is* subject to the principle of contradiction, where the definition satisfies the usual formal requirements? Are all undefined concepts vague? Since there are undefined concepts in any system and since reduction to them is the aim of all definition, doesn't it follow

[1] *Our Knowledge of Universals.* R. I. Aaron. Annual Philosophical Lecture, Henriette Hertz Trust, British Academy, 1945. (From the Proceedings of the British Academy, Vol. XXXI.) London: Humphrey Milford. 1945. 28 pp.

that the process of definition would lead to the vaguest terms of all —the primitive terms—if vagueness were to be identified with lack of definition? It does seem to the reviewer that being defined and being subject to Peirce's condition for precision are not coextensive properties of terms, but this is a matter well beyond the principal theme of the lecture. That the lecture should lead one to raise it, however, is evidence of the lecturer's capacity to stimulate thought on important problems.

In addition to the simple quality and the primitive gestalt-universal there are two others that Aaron examines. The first is not so vague as the primitive gestalt and yet not so precise as the constructed universals of advanced adult thinking and mathematics. The first is said to be a dispositional universal. When a child says that something is a house, he is saying, among other things, according to Aaron, that "if you are in a storm and if you come to what you recognize to be a house you may possibly be able to find shelter." Aaron believes that such universals, though not all, are adequately analyzed by pragmatists who view concepts as ways of operation.

The concluding part of the lecture is about constructed universals, in which Aaron maintains that some universals are literally constructed by the mind and hence artificial and subjective. We know these universals because we have constructed them. The materials out of which they are constructed are themselves vague universals rather than simple qualities like specific shades of red. Aaron concludes his lecture with the suggestion that universals allegedly conceived by poets are dispositional universals, but this point is made in a somewhat fugitive manner, almost as if he were just stepping down from the platform.

I would like to make a few critical comments, some of which have more serious implications for Professor Aaron's major thesis than others, but all of which are relevant to what he says in the lecture.

(1) At the end of the lecture Aaron remarks that "It ought to help us to know that the term *universal* is used in many senses, that sometimes we mean discovered and sometimes constructed universals, sometimes dispositional universals and sometimes explicitly conceived universals. We need to acknowledge also . . . the existence of vague universals as well as precise, and universals of things as well as universals of quality and relation" (p. 27). It will be noticed that Aaron chooses to say that the word "universal" is used in different *senses* rather than that there are different *kinds* of universals. The latter course would involve a division of one genus—the class of universals—into sev-

eral species and would raise a general question about the genus: what is a universal? or what do we mean by the word "universal"? This is clearly a difficult question and Professor Aaron is quick to say that the term is ambiguous, which, of course, would justify his failure to present "the" meaning of the term. But, and this is the important point, when we come to examine the different *senses* of the term (for example, the allegedly different senses of the term as it appears in the phrases "discovered universals" and "constructed universals"), it is not apparent that it shifts its sense any more than the word "sphere" shifts its sense when it moves from the context "discovered spheres" to the context "constructed spheres." Surely celestial spheres (which are discovered) are spheres in exactly the sense in which baseballs (which are constructed) are spheres. One may agree with Wittgenstein that a given word may be used in different senses which have at best a "family resemblance," but this suspicion may become morbid and we may be led into the opposite error of distinguishing senses when all we have is a distinction of species. Aaron seems to assume that universals which come to be known in different ways must constitute different classes that are not species of a single genus, but this is not obvious.

(2) In the course of showing that thing-universals are apprehended as recurring just as simple qualities are, Aaron uses a questionable argument. In order to establish this he feels obliged to refute the view that words like "man" are always used to refer to "*mere* complexes of universals of quality and relation." Now this latter view he interprets as implying that there just aren't any thing-universals; hence the "mere." But this presupposes a highly debatable notion of philosophical analysis, according to which the *analysandum* is always analyzed out of existence, so to speak, and one which would not only "annihilate" the concept *man* when it was analyzed into a complex of qualities but also when it was analyzed into, say, *rational animal*. Analysis or definition permits the theoretical elimination of certain modes of language but it hardly entails the non-existence of that which the eliminable expressions express or designate. Contextual definition, as in the case of Russell's theory of descriptions, will effect a reduction of our ontology, but this is not the effect of *all* definition. Aaron may be right in arguing that certain thing-universals are primitive but the issue as to whether they are analyzable is not identical with the issue as to whether they do or do not exist.

(3) Although the paper is on the whole "phenomenological and psychological," according to Aaron, at one point it treats certain questions of contemporary logic. One serious misunderstanding should be noted. According to Aaron, *Principia Mathematica*

translates a statement like "All men are liable to error" (an ironic illustration) as "for all cases of x, x is human and x is liable to error, or, for all cases of x, if x is human then x is liable to error" (p. 12, note), suggesting that either the generalized conjunction or the generalized conditional are adequate for this purpose. But obviously the generalized conjunction couldn't possibly be the translation of "All men are liable to error" since the former means "Everything is both a man and liable to error." An even more serious mistake is Aaron's statement that "for *all men* (in such a sentence as *All men are liable to error*) *Principia* substitutes *for any x, x is human*" (p. 12, note). It suffices to point out that the phrase "all men" is not a statement, whereas "for any x, x is human" is a statement, i.e., true or false, and so quite obviously they can't be mutual substitutes. It should be added that these logical errors are not fatal to any fundamental thesis of the lecture, which is a thoughtful and serious discussion of some important philosophical problems.

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COMMENTS UPON ROY SELLARS' VIEWS ON RELATIVITY

In a recent issue of this JOURNAL,[1] Professor Sellars attempted to defend his "physical realism" against the conclusions drawn from Einstein's theory of relativity.

Some of Mr. Sellars' terminology and ideas puzzle me, but certain points—the essential ones—seem to be clear enough for me to venture a few remarks that may serve to clarify the basic question. This question may be roughly formulated as follows: Do the temporal changes of systems undergoing relative motion actually (dynamically) occur to these systems intrinsically, or are such changes merely extrinsic and "kinematic," i.e., do they appear only during such motion and entirely vanish when the system is at relative rest?

Mr. Sellars is quite correct in saying that, in any given system, all clocks within that system (at rest with respect to each other) will remain synchronous with each other. For if such clocks are once set with each other (synchronous), then, by the very definition of a "good clock," they must remain synchronous with respect to each other. However, the essential point concerns the change (slowing down) that clocks undergo as observed from an unaccelerated coördinate system (a Galilean or inertial system) relative to which the clocks are moving. In the Lorentz equations of the special

[1] Vol. XLIII (1946), pp. 309–317.

theory of relativity, such motion is uniform rectilinear motion. There is no question by now that clocks (e.g., frequency of spectral lines from moving atoms) are experimentally observed to slow down when moving in this way with respect to an observer on an inertial system. I presume that Mr. Sellars does not deny the experimental evidence. He seems merely to interpret the evidence as not contradicting his views as to an unchanging intrinsic synchrony: the relative change of a clock's period and the loss of synchrony appear *only* during the relative motion. Such, at least, is Mr. Sellars' argument as nearly as I am able to understand it.

If Mr. Sellars would simply accept the proposition that the "proper time" of a good clock remains constant, there would be no objection to his thesis concerning "intrinsic synchrony." (The "proper time" of a clock is defined as the period as observed when it is at rest in an inertial system—including the case of momentary rest.) Mr. Sellars apparently gets into difficulty by going beyond this demand for constancy of proper time. For constancy of proper time does *not* prohibit a clock from undergoing a change of rate during motion such that when brought once again to rest with respect to the inertial system from which it began its trip, the clock would no longer be synchronous.

To be quite specific: Assume clocks A and B to be at rest in one inertial system. Let them be set together (synchronous) and beat at equal rates (isochronous). Now, permit clock B to accelerate so that it attains almost light velocity in a very short time according to A. The accelerating force, as such, does nothing to the clock's mechanism—by the assumption that it remains a good clock (which assumption can be checked by subjecting the clock to equivalent balanced forces when in the inertial system). We then permit clock B to travel along at the acquired uniform rectilinear motion with respect to A. From A's standpoint, B will be seen to run slow at the required relativistic rate. Subsequently, at some great distance from A, rapidly reverse the direction of B's motion by application of a force so that it will finally be heading back to A at the same speed as before. From A's standpoint, B will continue to run as slow as before. Finally, when B is near A, apply a force to B to bring it rapidly to rest with respect to A.

The crucial question for Mr. Sellars now becomes: When B is finally at rest with respect to A, will the B clock be behind time with respect to the A clock? Actually, experiment would demonstrate that B would lag A in its time reading by almost exactly the amount *predicted by the special theory of relativity.* That is, B would no longer be synchronous, though it would be found

(when finally at rest) to be once again isochronous with respect to *A*.

To anticipate one possible objection that might be raised to this example, it should be mentioned that the *special* theory can make this prediction with the usual uniform motion equation because the durations of the accelerations of clock *B* are short compared with the duration of its journey at uniform rectilinear motion with respect to clock *A*. A more exact and precise prediction would require consideration of the accelerations. And if one were to attempt to describe the foregoing experiment from the standpoint of an observer fixed on clock *B*, the use of concepts from the *general* theory would be required. But the essential fact remains: the special theory (with the simple time dilation equation) can give an adequate account of the experiment.[2] What is most important to note is that an equivalent experiment has actually been performed by P. Blackett, using the mesotrons (in cosmic rays) as our clock *B*.

It is known that mesotrons, at rest in an inertial system, decompose at a certain rate into electrons. The half-life expectancy of the resting mesotron is about one millionth of a second—this being a measure of the *proper* rate of decomposition. That rate does not depend upon external forces; it is intrinsic to the mesotron. In cosmic rays, the mesotrons have been accelerated to move at practically light speed. There they are found to decompose at the much slower rate *predicted by the special theory of relativity*. Such decomposition is irreversible in the sense that bringing the decomposed mesotron to rest would not restore it to its original state. This irreversibility gives us a means of testing the loss in *synchrony* demanded by relativity: just as the accelerated clock *B* fell behind time with respect to the resting clock *A*, so likewise the mesotron, originally accelerated into the cosmic ray, falls behind in its decomposition with respect to a resting mesotron. (In the case of spectral lines of an atomic clock, there is no such irreversibility, and only the kinematic effect of loss of *isochrony* can be tested. Isochrony is restored when the atom is brought to rest with respect to another such atom.)

How Mr. Sellars will attempt to fit these facts into his philosophy of physical realism I do not pretend to anticipate,[3] but,

[2] See R. Tolman, *Relativity, Thermodynamics, and Cosmology*, pp. 194–197; also Berenda, *Physical Review*, Vol. 62, pp. 287–290.

[3] He can not argue that such loss of synchrony supports his belief in "absolute movement," since general relativity shows that clock *A* can be regarded as in motion and still clock *B* will lag clock *A* at the end of the experiment.

if he seriously considers these remarks, I have little doubt that some such attempt will be made. Metaphysics does not so readily surrender to physics.

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MR. BURKS' ANALYSIS OF THE EMPIRICIST THEORY OF THE ORIGIN OF CONCEPTS

I should like to offer a brief comment on Mr. Burks' analysis of the empiricist theory of the origin of concepts, which he presents in his recent article, "Empiricism and Vagueness."[1] Burks evidently holds that the empiricist position regarding the source of concepts may be clarified through an examination of "ostensive definition," in terms of which he wishes to define empiricism.

An empiricist might well hesitate to state his position exclusively in terms of Burks' ostensive definition. For ostensive definition, in the sense Burks specifies, amounts merely to an indication of the predicative usage (positive and negative) of the term which connotes the concept in question—to an indication of the entities to which the term applies, and those to which the term does not apply. Now in the case of common terms, this usage is known by every competent user of the given language. Yet not every competent user of the language is able to *define* (we should ordinarily say) each common term. Thus most persons would find considerable difficulty in *defining* such common terms as "chair," "horse," "tree," etc., even though the correct usage of such terms is perfectly evident to them.[2]

Clearly, the empiricist must recognize a sense of "definition" other than Burks' ostensive definition. When one calls for a definition of a term of common usage, one is calling for a clarification of the connotative meaning of that term—one is attempting to gain a clearer understanding of the character which any entity must possess to be included within the accepted denotation of the given term. Such a clarification may be achieved through analysis. A statement of the end-result of analysis in such a case is the "definition" requested.

I submit as an alternative to Burks' analysis of the empiricist theory of the source of concepts the following: The correct definition of a meaningful term either must itself fit some specifiable ostensive usage of the given term, i.e., a usage consisting of predicative ap-

[1] This JOURNAL, Vol. XLIII, (1946), pp. 477–486.

[2] This is not to deny the fact of borderline cases, and of the vagueness of common terms, discussed by Burks in section II of the article mentioned.

plications, positive and negative, of the term to entities presented in experience, or must be phrased in terms whose definitions do, ultimately, thus fit ostensive usage. A definition "fits" a given usage when the *definiens* may be substituted for the term defined in all statements falling within the specified usage, without thereby altering their *implicans* and *implicates*. This, I believe, is a logical sense in which the empiricist might plausibly maintain "that all concepts are either derived from experience or constructed out of concepts which are derived from experience."[3]

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BOOK NOTES

The Theory and Practice of Philosophy. ABRAHAM EDEL. New York: Harcourt, Brace and Company. 1946. xii + 475 pp. $3.00.

Professor Edel in this introductory textbook covers the field of philosophy from the "Nature of Explanation" to religion and art. It is thus a compendium which could be made useful for an extraordinary variety of purposes and there are probably few philosophical questions now debated which are not considered in it. Causality, change, God, the body-mind problem, various interpretations of materialism and idealism, the various types of psychology, the self, are all treated in its pages, along with dozens of other topics which might arouse an undergraduate's doubts and fill a teacher's schedule. Though all questions are examined with exemplary objectivity and so presented as to make it not unlikely that some intelligent men might have raised them, their solutions are not avoided and the author's philosophical point of view is clearly stated. Possibly the one serious objection which might be raised by a reader of this book is that it covers too much territory, and indeed it is difficult to see how any but the most voracious student could be made to go through it all in one course.

Professor Edel's point of view is that known as "naturalism." It is a point of view with which your reviewer is sympathetic. The naturalism which guides the author's presentation and solution of philosophic problems consists largely in utilizing what he believes to be the method of science in so far as that method can be applied to questions to which no experimental answer is possible. This is, it must be admitted, a serious limitation. For no matter how

[3] *Op. cit.*, p. 477.

"empirical" our technique may be, the natural sciences are not merely empirical in the sense of being anti-speculative, or, if one prefer, anti-dialectical—as, for instance, Schelling was speculative and Hegel dialectical. They are also experimental in the sense that they set up highly refined situations in which certain elements may be varied at will to determine their effect on a total complex. A scientific technique comparable to that of a geneticist, or even a laboratory psychologist, is scarcely applicable to such questions as that of the existence of God, freedom of the will, and human immortality. One may prefer therefore not to discuss such questions—even if one does not go to the extreme of calling them "meaningless." But philosophers do discuss them and so does Professor Edel. Consequently he has to rely on what he calls an "empirical" re-interpretation of their meanings in order to handle them naturalistically.

Now when one insists on referring to experience as a test of meaning as well as truth, one can not avoid the question of whose experience is to be the guide. We can no longer resort to a transcendental unity of appreciation, nor to a standard man, nor to a majority vote. In the case of a genuinely scientific experiment, we know that the terms involved acquire meaning within the context of the experiment in question. We can, if we wish, say that electricity is that which is measured with a galvanometer and stop there, just as we can say that the force of gravitation is that which is described in the Law of Gravitation. But the substantives which are in vogue in philosophy are not measurable or even describable in experimental terms, however empirical we may wish to make them. If someone raises the question of the nature of God, we may, if we wish, deny His existence, but we can not feel that we have given a satisfactory philosophical answer to the question by replying, "God is what we pray to."

There is another difficulty in the scientific approach in philosophy which apparently is not so obvious as one would have thought. Experiments are devised, as Professor Edel knows, to answer certain specific questions. In science such questions themselves determine the kind of answer which is going to be given. Thus theories about the constitution of matter were formulated to explain certain material phenomena and in turn gave rise to further questions which were involved both in the original questions and in their solution. The history of the dispute between Pasteur and Bastion illustrates this as well as it need be illustrated. The experiments which Pasteur elaborated could never have been imagined, it would seem likely, unless Pasteur had first been convinced of biogenesis. Or, again, the variations which Darwin

noticed within a species could have been observed by Aristotle, but Aristotle's experience could not guide him to seeing these as an important problem for the simple reason that he could always fall back upon the corruptive power of matter to explain them away. When something ceases to be explained away and becomes explained, it is an historical moment of the greatest significance for the person who would found his philosophy upon science. One can not say that Professor Edel does not realize this, for he is too learned not to and may have felt that he had every reason in a book of the scope of this one to leave it to one side.

Yet a person who has been impressed with the number of difficulties which arise in a critical study of our most ordinary practices can not but feel uneasy when space is not found to push an investigation to its limits. Would it not be a good thing to impress upon our students the insecurity of our knowledge, rather than its satisfactoriness? It is true that students want answers. It is especially true in these days of what the newspapers and magazines are always calling days of confusion and doubt. Professor Edel is more scrupulous than most writers of texts in his analyses, more careful to do justice to points of view with which he does not agree. But at the same time he writes with an air of intellectual optimism which becomes at times rather trying. He lacks a certain scepticism, perhaps even what has come to be called cynicism. Thus in his treatment of democracy, he is willing to speak of the People as something to have faith in, without any detailed account of whether there is such a thing to have faith in. Is it not possible and even intelligent to maintain that there are at best groups of persons and that their organization into a People is more of a figure of speech than anything else? The conflicts which arise among these groups certainly seem as irreducibly real as any supposed harmony. When one has worked for a political party, making stump speeches, attempting some kind of discipline which will bring its members into close agreement on all relevant issues, one soon awakes to the fact that the only end they share is the election of a given man or group of men, but that they usually differ about what they want those individuals to attain, not only for society but for themselves, the voters. Or, to take a different example, one from the field of esthetics: is it not time finally to stop talking about "Art," as if it were a single univalent thing, and to tackle seriously the problems of the arts? Is it not a bit of a shock to find a sophisticated writer saying, "Those products (both things and actions) which are created primarily for man's appreciation and enjoyment as such may be called esthetic?" Have we any evidence to tell us why the *Iliad* was written or the Attic vases painted? It is

said that Bach gave as his reason for composing music, "the glory of God and a pleasant occupation." The story is perhaps apocryphal, but the lesson is clear. The reason he had is irrelevant to our use of what he produced.

In spite of these and other adverse comments which could be made, Professor Edel has given us the first naturalistic textbook in philosophy. Most unprejudiced readers will agree that he has done the job with eminent success, without superficiality or carelessness. He has introduced topics from contemporary life which are a noteworthy addition to undergraduate literature. If one objects to certain details, it is because so good a book ought to be better.

GEORGE BOAS

THE JOHNS HOPKINS UNIVERSITY

Productive Thinking. MAX WERTHEIMER. New York and London: Harper & Brothers. 1945. xi + 224 pp. $3.00.

This posthumous volume by one of the founders of Gestalt psychology was completed shortly before the author's death, and is published as he wrote it except for some linguistic revisions. It is based on material presented by Professor Wertheimer in recent years to his classes at the New School for Social Research, and was regarded by him as a prolegomenon to two other books he had hoped to write. The present volume thus contains his matured reflections on the nature of "living thought," and is an engaging introduction to the central conceptions of the Gestalt approach in psychology. Though it treats of technical matters, it exhibits Professor Wertheimer's informal manner, his contagious enthusiasm, and his charm.

The task Professor Wertheimer set for himself was to make explicit in terms of concrete examples what happens when thinking moves in original and productive directions and is thus engaged in successfully resolving the problems before it. With the help of happily chosen illustrations, and in part by contrasting his findings with views attributed to associationist psychology and traditional logic, he portrays clearly and vividly the rôle played in creative thought by insight into structure and by the envisagement of the "whole characteristics" of situations. His central thesis is that "structural reasons become causes" in the process of productive thinking. His examples are drawn from contexts as varied as the construction of proofs for simple mathematical theorems, the readjustment of personal attitudes and perspectives in ordinary life situations, and the theoretical researches of Galileo and Einstein. His discussions should be particularly valuable to teachers

and educators, for he shows persuasively the limitations of routine drill, and makes evident that solutions of problems are reached by regrouping and reorganizing the original elements in a situation in the light of guiding ideas concerning its total structure.

Professor Wertheimer is at his best in his positive delineations of the operations of successful thinking, and least plausible in his general formulations and in his criticism of points of view to which he feels himself hostile. Thus, some of the proofs he supplies for mathematical theorems as superior alternatives to those usually presented are indeed strikingly penetrating. But it is difficult to see how this procedure can be generalized so as to deal with more complicated problems of the same type—a difficulty that can not justly be raised against the proofs he characterizes as "blind." It is also curious to find a writer as well-informed as was Professor Wertheimer accusing traditional logic (even in its modern mathematical form) of not being conducive to productive thinking, of introducing assumptions which do not "generally fit real thinking," and of being blind to structures—as if the professed task of formal logic were the descriptive study of thought processes, and as if the notion that logic is the general science of abstract order were not integral to one phase of formal studies. Nor is it clear why the fact that not all logical operations are commutative should be regarded as evidence against the claim that formal logic deals with "tautologies." But perhaps the basic unclarity in Professor Wertheimer's views is associated with his sharp contrast between "and-sums" and "real relations." The reader can not help suspecting that "real relations" are simply those which happen to be familiar or psychologically vivid. And it is in order to note that one can not intelligibly deny that certain processes or wholes are "and-sums" of their parts, unless one is prepared to explain just what the "and-sum" of those parts would be were they actually combined in that manner—for if such "sums" have not been antecedently defined, it makes no sense to say that they do not obtain in a given context. But this elementary requirement is observed only in the breach by most writers on the subject, among whom Professor Wertheimer must regrettably be included.

E. N.

Human Dignity and the Great Victorians. BERNARD N. SCHILLING. New York: Published for Grinnell College by Columbia University Press. 1946. xiii + 246 pp. $3.00.

Like so many contemporary works of its type, the present study, although a genuine, if modest, contribution to the history of ideas,

is *not* "content to swell a scene or two"; it needs must also "advise the Prince." Since this advice seems, to the present reviewer at least, of dubious value, he is compelled to consider the work in somewhat different terms than he would if its scholarly merits alone were in question.

Mr. Schilling's book traces the development of the political-social attitudes and ideas of seven important nineteenth-century writers,[1] beginning with Coleridge and ending with William Morris. All of them share in common (*a*) a "concern for human dignity and oneness," (*b*) a revulsion against the spiritual and physical degradation of the great masses during the period following the Industrial Revolution, (*c*) an opinion that a great cause of this degradation was the system of laissez-faire liberalism which embodied the ideology of the rising industrialist bourgeoisie, and (*d*) a religious or quasi-religious optimism which caused them, with the exception of Morris, to seek for the regeneration of the potentially "good" nature of man through a process of "conversion." They also exemplify a progressively extreme reaction, which reaches its climax in the socialism of Morris, against the prevailing social-economic system. There is, finally, a less tangible trait, to which Mr. Schilling alludes, which also binds these writers together. Just as Coleridge claimed that every man is born a Platonist or an Aristotelian, so Mill in 1838 proclaimed that every Englishman is by implication a Coleridgian or a Benthamite. It is perhaps just possible that Coleridge and Mill were thinking roughly of the same thing. At any rate, we may agree that Mr. Schilling's "great Victorians" were in some ways unmistakable spiritual children of the "great seminal mind," as Mill called it, of Coleridge himself. What they share in common, as Coleridgians, is not so much a doctrine or program as it is certain pervasive habits of mind.

It is curious, and indeed rather appalling, how little these men of letters were influenced by the intellectual revolution entailed by the rise of modern science. Not one of them, save the early Coleridge, even understood clearly the motives which animated the Philosophical Radicals whose ideas and methods might possibly have saved them from frustration, disillusionment, and, in many instances, a reactionary return to feudalism which seemed to them the only way of checking the moral and cultural blight by which they were so repelled. We have, in fact, only to compare these "great Victorians" with the *philosophes* of the French Enlightenment to see how far the former, in contrast to the latter, had

[1] These include Coleridge, Southey, Kingsley, Carlyle, Arnold, Ruskin, and Morris.

fallen behind the great progressive intellectual and social movements of their time.

What Mr. Schilling's book utterly fails to bring out is that the genuine failure of each of his writers is essentially an intellectual failure. They "opposed" the liberal political economists; but they lacked the equipment either to refute them on their own terms or to provide any carefully reasoned alternative. Their own "theories," unfortunately, were on the whole not much more than vivid "poetic" outcries of moral indignation and traditional religious faith. Their "thinking" remained, in Cassirer's sense, largely mythological.

Mr. Schilling only partially realizes the tragic paradox which appears in its most extreme form in Carlyle. Carlyle, in some sense, did believe in the potential dignity of man. His Calvinistic outrage at injustice and oppression is completely sincere. But his social "philosophy" is expressed in terms of myths which are almost entirely anti-democratic, anti-liberal, and anti-intellectualistic.

Why was it that the Victorian men of letters were so singularly unsuccessful in the long run either as prophets or as diagnosticians? Why were their ideas so completely without effect in removing the horrors which they loathed? We have only to compare them with such genuine thinkers as Mill and Marx to see the answer. Briefly, it is their lack of and, in some instances, active aversion to exact thought and general ideas. In short, despite Mr. Schilling's assertion to the contrary, most of these men illustrate the uselessness of *mere* "literary" expressions of pious or benevolent sentiments without the trained intelligence which can fruitfully direct them to real possibilities of social progress and reform. Mr. Schilling is, indeed, guilty of a mischievous fallacy when he says that language which is "fluid and literary" "corresponds more nearly to a human truth than the language of science."

Mr. Schilling's purpose in writing this book is, as I have said, more than scholarly, although his scholarship is broad rather than profound. We may be grateful to him "for a reminder once more of the very ideas we profess to believe and upon which we must now take action." But it is just because his "great Victorians" so "dimly shadow forth the vague aspirations of mankind toward justice and peace" that we so often partially misrepresent them as reactionaries. With Arnold and Morris alone do we find ourselves even remotely in the presence of spiritual and intellectual comrades. The others leave us cold—or worse.

In conclusion I wish to record my impression that the literary achievement of a Carlyle is far less contemporary than that of the "pure" poets, such as Hopkins, who stuck more closely to their

own tasks, and that it is far less edifying and instructive than that of true thinkers such as Mill, who took the trouble to provide themselves with a few "clear and distinct ideas." And I am bound to say reluctantly that the revival in our own day of that obsolescent phenomenon, the general man of letters, is perhaps not wholly auspicious. The similarity between the careers of Coleridge and Southey and those of T. S. Eliot and W. H. Auden is too close for comfort.

H. D. A.

Cicero in the Courtroom of St. Thomas Aquinas. E. K. RAND. (The Aquinas Lecture, 1945.) Milwaukee: Marquette University Press. 1946. 115 pp. $1.50.

In this lecture of about seventy pages, delivered by Professor Rand at Marquette University not long before his death, the humanistic element of medieval scholasticism is given its due with that rare combination of scholarship, humor, and informal elegance of style so characteristic of the author. The task which Professor Rand sets for himself is that of determining, by the aid of a Concordance of St. Thomas's *Summa Theologica* prepared by Professor Defarrari and Sister Inviolata of the Catholic University, the degree to which Aquinas invokes the authority of Cicero in his discussion and resolution of problems in the *Summa.*

After pointing out the fact, too often forgotten, that the foundation of medieval education remained liberal and classical even in the period when Aristotle became dominant in the advanced university courses, Professor Rand enumerates some of the Latin authors on which the thirteenth-century schoolboys were nurtured. Ovid, Livy, Caesar, Sallust, Terence, Valerius Maximus, Varro, and Vegetius are mentioned, and, more close to philosophy, Seneca, Cicero, and Boethius. Of Cicero's writings, only a part was available at first hand, though the rest was far from unknown by way of quotations by intermediary authors. In particular, Cicero's treatises on rhetoric, as known to St. Thomas, were limited to his earlier works—the *Ad Herennium* and *Rhetorica* (or *De inventione*)—and did not include the *De oratore,* the *Brutus,* or the *Orator.*

Most of St. Thomas's explicit citations of Cicero, in the *Summa,* occur in the part which treats of human virtue and conduct, and particularly in the discussions of the four cardinal virtues. Here St. Thomas takes Cicero's definitions as starting points of discussion, and though he often modifies or amplifies the Ciceronian analysis under the influence of Aristotle or of St. Augustine, he

rarely rejects these formulations entirely, and most frequently retains them. More significantly still, Professor Rand finds that in those cases where St. Thomas is compelled to choose between opposed positions, with Cicero in opposition to Aristotle or other authorities, the decisions favor Cicero more often than his opponents.

This little glimpse into St. Thomas's use of Cicero in the *Summa* is given under the metaphor of a courtroom, where Aquinas is the judge, Cicero, Aristotle, and other ancient authors are contending witnesses, and definitions or doctrines are on trial. The courteous hearing and favorable decisions accorded to Cicero, in the cases examined, testify to the classical education and breadth of intellectual sympathy to be found in the author of the *Summa Theologica.*

With characteristic good taste, Professor Rand reserves the *impedimenta* of scholarly apparatus for thirty-two pages of footnotes placed at the end of his essay, to which he adds two appendices supplementing the information given in the lecture itself. In this, subject-matter and information provide a background for a more interesting experience, that of glimpsing the humane culture and broad sympathies of an outstanding American scholar. Professor Rand's defense of the humanism of St. Thomas, like Cicero's defense of the poet Archias, is the occasion for an eloquent and persuasive plea for a liberal wisdom nourished by art as well as by science, and by literature as well as by philosophy.

E. A. M.

CURRENT JOURNALS

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PHILOSOPHICAL REVIEW. Vol. LV, No. 6. Philosophy of Criticism: *Bertram Morris.* Peirce's Early and Later Theory of Cognition and Meaning: Some Critical Comments: *George Gentry.* Plato and Progress: *R. C. Lodge.* Discussion—Current Strictures on Reason, A Criticism: *J. H. Groth.* Current Strictures on Reason, A Rejoinder: *Brand Blanshard.* Meaning without Mind: *A. G. Ramsperger.* Berkeley's Conceptualism: *S. C. Rome.*

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PHILOSOPHY. Vol. XXI, No. 80. The Philosophy of Berdyaeff: *W. R. Inge.* Descartes and Leibniz in 1946 on their 350th and 300th Birthdays: *Paul Schrecker.* On the Idea of Importance: *D. M. Emmet.* Reply to Historicism: *F. H. Heinemann.* Memory as Accompaniment: *E. M. Rowell.*

NOTES AND NEWS

The newly-elected officers of the Pacific Division of the American Philosophical Association are as follows: President, Hans Reichenbach; Vice-President, Paul Marhenke; Secretary-Treasurer, E. W. Strong; new member of the Executive Committee, Herbert J. Phillips.

The newly-elected officers of the Eastern Division of the American Philosophical Association are as follows: President: Cornelius Krusé; Vice-president, Arthur E. Murphy; Secretary-Treasurer, Eugene C. Holmes; new members of the Executive Committee: H. Richard Niebuhr and Milton C. Nahm.

We are glad to announce that the following new book editors are joining the staff of this JOURNAL for the term 1947–1950: Joseph L. Blau, Columbia University; C. West Churchman, University of Pennsylvania; John R. Everett, Wesleyan University; Otto F. Kraushaar, Smith College.